

1. What does FIND-MAXIMUM-SUBARRAY method return when all elements of A are negative numbers? The algorithm is given below. Note that A is an array that contains difference between consecutive numbers in another array B . For the example figure given below, A corresponds to the Change row of the table (not the Price).

FIND-MAXIMUM-SUBARRAY($A, low, high$)

```

1  if high == low
2      return (low, high, A[low])          // base case: only one element
3  else mid =  $\lfloor (low + high) / 2 \rfloor$ 
4      (left-low, left-high, left-sum) =
          FIND-MAXIMUM-SUBARRAY( $A, low, mid$ )
5      (right-low, right-high, right-sum) =
          FIND-MAXIMUM-SUBARRAY( $A, mid + 1, high$ )
6      (cross-low, cross-high, cross-sum) =
          FIND-MAX-CROSSING-SUBARRAY( $A, low, mid, high$ )
7      if left-sum  $\geq$  right-sum and left-sum  $\geq$  cross-sum
8          return (left-low, left-high, left-sum)
9      elseif right-sum  $\geq$  left-sum and right-sum  $\geq$  cross-sum
10         return (right-low, right-high, right-sum)
11     else return (cross-low, cross-high, cross-sum)

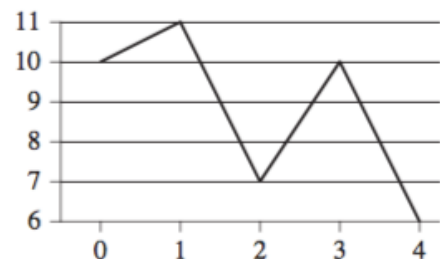
```

FIND-MAX-CROSSING-SUBARRAY($A, low, mid, high$)

```

1  left-sum =  $-\infty$ 
2  sum = 0
3  for i = mid downto low
4      sum = sum + A[i]
5      if sum > left-sum
6          left-sum = sum
7          max-left = i
8  right-sum =  $-\infty$ 
9  sum = 0
10 for j = mid + 1 to high
11     sum = sum + A[j]
12     if sum > right-sum
13         right-sum = sum
14         max-right = j
15 return (max-left, max-right, left-sum + right-sum)

```



Day	0	1	2	3	4
Price	10	11	7	10	6
Change		1	-4	3	-4